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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,060	09/06/2005	Lutz Uwe Lehmann	H26787 US-4780	3487

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LOEWE, ROBERT S	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,060

Applicant(s)

LEHMANN ET AL.

Examiner

Robert Loewe

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 55-78 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 55-78 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/22/07; 3/14/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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DETAILED ACTION

Applicant's election of group II and species 7 without traverse in the reply filed on August 29, 2007 is acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 60, 62 and 69 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, these claims have the limitation "m=0". Independent claims 55 and 63 define m as being an integer from 1 to 4. For purposes of further examination, the examiner will treat "m=0" as meaning that no R₆ groups are appended to the fused benzo group which is attached across the X-Y, T-X, or Y-Z bonds. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 55-60 and 70-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldwin et al. (US application 2002/0095018), in view of Hirotsaki et al. (US application 2001/0018163).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Claim 55: Baldwin et al. teaches a silyl alkyl ester having of formula (I) of instant claim 55 wherein R_1 - R_3 are alkyl, R_4 and R_5 are hydrogen, n is equal to 3 or 4, T , X , Y , and Z represent carbon, and a benzo group is fused across the X - Y bond forming an anthracene moiety, wherein the silyl group is bonded to the middle ring of the system (compounds 20-21 and 25 of figure 1c).

Baldwin et al. does not teach that m is an integer of from 1 to 4, nor that R_6 is a carboxy group, carboxylic acid ester group or a carboxylic acid amide group. However, Hirosaki et al. teaches an anthracene moiety with two carboxylic acids, namely 9,10-anthracene dicarboxylic acid. Baldwin et al. and Hirosaki et al. are combinable because they are from the same field of endeavor, namely, anti-reflective coatings for photolithography. At the time of invention, a person having ordinary skill in the art would have found it obvious to employ a substituted anthracene moiety such as 9,10-anthracene dicarboxylic acid as taught by Hirosaki et al. into the silyl alkyl esters as taught by Baldwin et al. and would have been motivated to do so since Hirosaki et al. teaches that 9,10-anthracene dicarboxylic acids have high molar absorptivities and good thermal crosslinkability and high effectiveness for prevention of intermixing of layers (paragraph 0063).

Claims 56-58: Baldwin et al. teaches that R_1 - R_3 is equal to methyl (compounds 20-21 and 25 of figure 1c).

Claims 59-60: Baldwin et al. teaches an unsubstituted benzo group across the X - Y bond (compounds 20-21 and 25 of figure 1c).

Claims 70-73: Baldwin et al. teaches at least one further reactive silane (paragraph 0028).

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Claim 74: Baldwin et al. teaches a solvent (paragraph 0029).

Claims 75-76: Baldwin et al. teaches that alcohols, ketones and linear carboxylic acids are used as solvents (paragraph 0029).

Claims 77-78: Baldwin et al. teaches an aqueous solution of at least one protonic acid (such as nitric acid) or an aqueous solution of at least one acid anhydride (paragraph 0028).

Claims 61-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldwin et al. (US application 2002/0095018), in view of Hirosaki et al. (US application 2001/0018163) as applied to claim 55 above, further in view of French et al. (US Pat. 6,096,460).

Baldwin et al. and Hirosaki et al. teach formula (I) of instant claim 55 as described above. Baldwin et al. does not teach that the benzo group is condensed across either the T-X or Y-Z bonds, i.e., a phenanthrene moiety. However, French et al. teaches phenanthrene moieties (7:44-46, 60-63). Baldwin et al. and French et al. are combinable because they are from the same field of endeavor, namely, photolithographic compositions. At the time of invention, a person having ordinary skill in the art would have found it obvious to employ phenanthrenes as taught by French et al. into the silyl alkyl esters taught by Baldwin et al. and would have been motivated to do so since French et al. teaches that phenanthrene has a high molar absorptivities at both 193 and 248 nm (7:44-63), which is a desirable trait for anti-reflection materials.

Claims 63-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldwin et al. (US application 2002/0095018), in view of Hirosaki et al. (US application 2001/0018163), further in view of French et al. (US Pat. 6,096,460).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Claims 63 and 69: Baldwin et al. teaches a silyl alkyl ester having of formula (I) of instant claim 63 wherein R_1 - R_3 are alkyl, R_4 and R_5 are hydrogen, n is equal to 144, T, X, Y, and Z represent carbon, and a benzo group is fused across the X-Y bond forming an anthracene moiety, wherein the silyl group is bonded to the middle ring of the system (compounds 18-25 of figure 1c).

Baldwin et al. does not teach that m is an integer of from 1 to 4, nor that R_6 is a carboxy group, carboxylic acid ester group or a carboxylic acid amide group. However, Hirotsaki et al. teaches an anthracene moiety with two carboxylic acids, namely 9,10-anthracene dicarboxylic

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acid. Baldwin et al. and Hirosaki et al. are combinable because they are from the same field of endeavor, namely, anti-reflective coatings for photolithography. At the time of invention, a person having ordinary skill in the art would have found it obvious to employ a substituted anthracene moiety such as 9,10-anthracene dicarboxylic acid as taught by Hirosaki et al. into the silyl alkyl esters as taught by Baldwin et al. and would have been motivated to do so since Hirosaki et al. teaches that 9,10-anthracene dicarboxylic acids have high molar absorptivities and good thermal crosslinkability and high effectiveness for prevention of intermixing of layers (paragraph 0063).

Baldwin et al. does not teach that the benzo group is condensed across either the T-X or Y-Z bonds, i.e., a phenanthrene moiety. However, French et al. teaches phenanthrene moieties (7:44-6, 60-63). Baldwin et al. and French et al. are combinable because they are from the same field of endeavor, namely, photolithographic compositions. At the time of invention, a person having ordinary skill in the art would have found it obvious to employ phenanthrenes as taught by French et al. into the silyl alkyl esters taught by Baldwin et al. and would have been motivated to do so since French et al. teaches that phenanthrene has a high molar absorptivities at both 193 and 248 nm (7:44-63), which is a desirable trait for anti-reflection materials.

Claims 64-66: Baldwin et al. teaches that R_1 - R_3 is equal to methyl, ethyl, propyl, or butyl (compounds 18-25 of figure 1c).

Claim 67: Baldwin et al. teaches that R_4 and R_5 are hydrogen (compounds 18-25 of figure 1c).

Claim 68: Baldwin et al. teaches that n is an integer from 1 to 4 (compounds 18-25 of figure 1c).

Claims 70-73: Baldwin et al. teaches at least one further reactive silane (paragraph 0028).

Claim 74: Baldwin et al. teaches a solvent (paragraph 0029).

Claims 75-76: Baldwin et al. teaches that alcohols, ketones and linear carboxylic acids are used as solvents (paragraph 0029).

Claims 77-78: Baldwin et al. teaches an aqueous solution of at least one protonic acid (such as nitric acid) or an aqueous solution of at least one acid anhydride (paragraph 0028).

Claims 55-62 and 70-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy et al. (US application 2002/0128388), in view of Hirosaki et al. (US application 2001/0018163).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the

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reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C.

103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Claim 55: Kennedy et al. teaches a silyl alkyl ester having of formula (I) of instant claim 55 wherein R_1 - R_3 are alkyl, R_4 and R_5 are hydrogen, n is equal to 1, T, X, Y, and Z represent carbon, and a benzo group is fused across the X-Y bond forming an anthracene moiety, wherein the silyl group is bonded to the middle ring of the system (paragraph 0018).

Kennedy et al. does not teach that n is an integer from 3 to 5. However, the structural teachings of Kennedy et al. and that of the instant application are very similar. Specifically, changing from a methyl spacer to a propyl spacer (i.e., changing $n=1$ to $n=3$) does not render the compound of the instant application unobvious. A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." *In re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979). See MPEP 2144.09. At the time of invention, a person having ordinary skill in the art would have found it obvious to employ a higher alkylene spacers such as propylene and would have been motivated to do so because higher/longer alkylene spacers provide better flexibility and solubility over methylene spacers.

Kennedy et al. does not teach m is an integer of from 1 to 4, or that R_6 is a carboxy group, carboxylic acid ester group or a carboxylic acid amide group. However, Hirosaki et al. teaches an anthracene moiety with two carboxylic acids, namely 9,10-anthracene dicarboxylic acid.

Kennedy et al. and Hirosaki et al. are combinable because they are from the same field of endeavor, namely, anti-reflective coatings for photolithography. At the time of invention, a person having ordinary skill in the art would have found it obvious to employ a substituted anthracene moiety such as 9,10-anthracene dicarboxylic acid as taught by Hirosaki et al. into the silyl alkyl esters as taught by Kennedy et al. and would have been motivated to do so since Hirosaki et al. teaches that 9,10-anthracene dicarboxylic acids have high molar absorptivities and good thermal crosslinkability and high effectiveness for prevention of intermixing of layers (paragraph 0063).

Claims 56-58: Kennedy et al. teaches that R_1-R_3 is equal to methyl (paragraph 0018).

Claims 59-60: Kennedy et al. teaches an unsubstituted benzo group across the X-Y bond (paragraph 0018).

Claims 61-62: Kennedy et al. teaches an unsubstituted benzo group condensed on either the T-X or Y-Z bond (paragraph 0018).

Claims 70-73: Kennedy et al. teaches at least one further reactive silane (paragraph 0032).

Claim 74: Kennedy et al. teaches a solvent (paragraph 0033).

Claims 75-76: Kennedy et al. teaches that alcohols, ketones and linear carboxylic acids are used as solvents (paragraph 0033).

Claims 77-78: Kennedy et al. teaches an aqueous solution of at least one protonic acid (such as nitric acid) or an aqueous solution of at least one acid anhydride (paragraph 0033).

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Relevant Art Cited

The prior art made of record and not relied upon but not considered is pertinent to Applicant's disclosure can be found on the attached PTO-892 form.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Loewe whose telephone number is (571) 270-3298. The examiner can normally be reached on Monday through Friday from 9:30 AM to 7:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RSL
4-September-2007


MARK EASHOO, PH.D.
SUPERVISORY PATENT EXAMINER

12/04/07